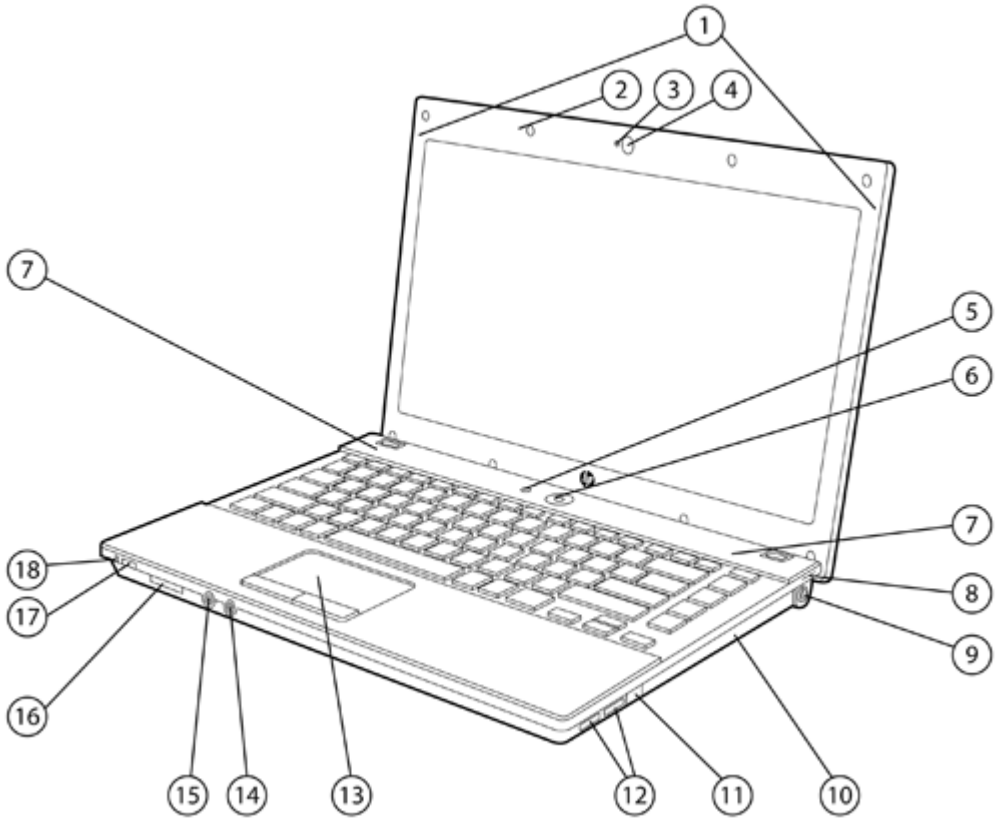
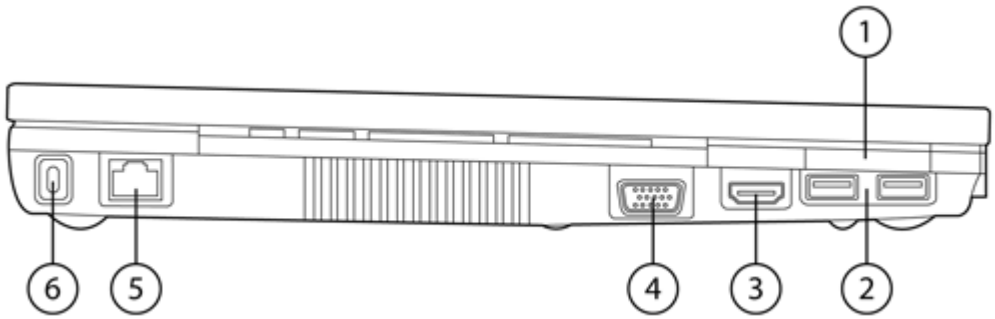
Overview

Windows®. Life without Walls™.
HP recommends Windows.

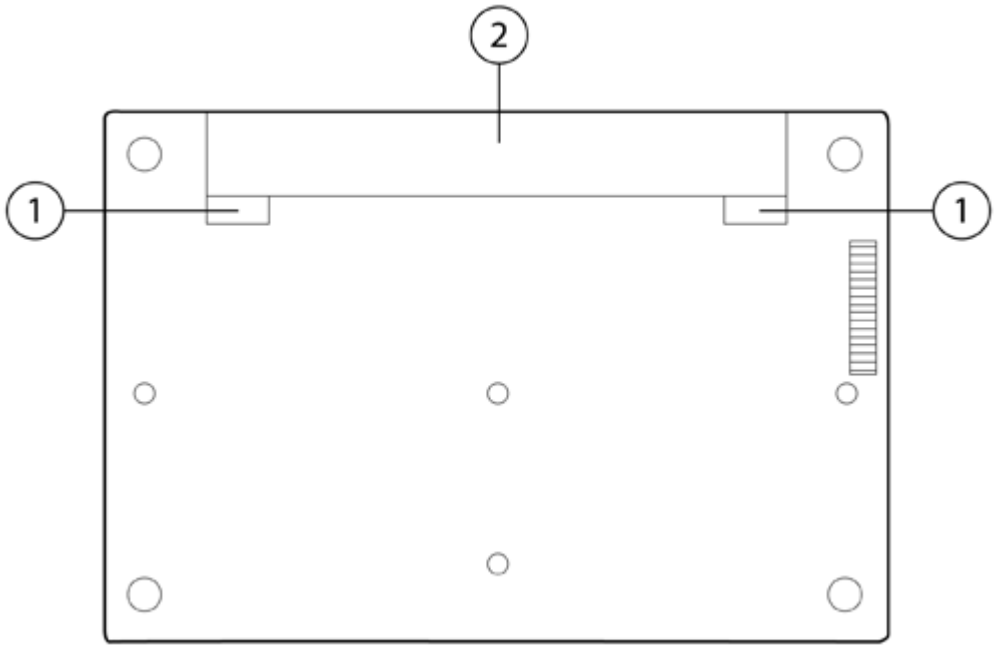


1. WLAN antennas
2. Integrated microphone
3. Webcam light (works with optional webcam)
4. Optional 2 MP webcam
5. Quick Look button
6. Power button with LED indicator
7. Stereo speakers
8. Battery charging LED indicator
9. Power connector
10. Optical drive
11. Optional RJ-11/modem port
12. (2) USB 2.0 ports
13. Touchpad with scroll zone
14. Stereo microphone in
15. Stereo headphone/line out
16.. Media Card Reader
17 Wireless switch with LED indicator
18. Hard drive activity LED indicator

Overview



1. ExpressCard/34 slot
2. (2) USB 2.0 ports
3. HDMI port
4. VGA connector (external monitor/projector)
5. RJ-45/Ethernet port
6. Kensington Lock slot



1. Battery release latches
2. Battery bay

Overview

At A Glance

- Genuine Windows 7 versions offered when Windows 7 is generally available, Genuine Windows Vista versions, Windows XP Professional (available through downgrade rights from Genuine Windows Vista Business), SUSE Linux, Red Flag Linux (PRC only), or FreeDOS
- Thin, lightweight design starting at 5.0 lb/2.27 kg and 1.22 in/31.0 mm thin at front
- Choice of Merlot or glossy Noir (black) finish
- Widescreen 14.0-inch diagonal HD LED-backlit display with 16:9 aspect ratio, BrightView optional
- Flexible wireless connectivity options:
  - Integrated 802.11 a/b/g/n draft 2.0, a/b/g, or b/g wireless LAN module
  - Integrated HP un2420 EV-DO/HSDPA Mobile Broadband Module provides worldwide Gobi mobile Internet technology with GPS
  - Bluetooth®
- ATI Mobility Radeon HD 4330 discrete graphics
  or Mobile Intel Graphics Media Accelerator 4500MHD integrated graphics
- HDMI port for connecting to high-resolution displays
- Optional optical drives include Blu-ray ROM DVD+/-RW SuperMulti DL LightScribe Drive for high-definition playback and burning custom labels directly to your discs
- Available with Intel® Core™2 Duo or Intel® Celeron® processor
- Integrated Media Card Reader
- Enhanced security features including HP ProtectTools Security Manager, Disk Sanitizer, and HP SpareKey
- Optional integrated 2 MP webcam
- Full-sized spill-resistant keyboard with better spaced keys
- Up to 500 GB 7200 rpm or 5400 rpm hard drive with HP 3D DriveGuard protection
- Up to 8 GB of DDR2 or DDR3 SDRAM supported, dual channel memory support

Standard Features

Processors (Availability depends on chipset and wireless configuration)	Intel Core 2 Duo Processor T9600 (2.8 GHz, 6 MB L2 cache, 1066 MHz FSB)* Intel Core 2 Duo Processor T9400 (2.53 GHz, 6 MB L2 cache, 1066 MHz FSB)* Intel Core 2 Duo Processor P8700 (2.53 GHz, 3 MB L2 cache, 1066 MHz FSB)* Intel Core 2 Duo Processor P8600 (2.40 GHz, 3 MB L2 cache, 1066 MHz FSB)* Intel Core 2 Duo Processor P7570 (2.26 GHz, 3 MB L2 cache, 1066 MHz FSB)* Intel Core 2 Duo Processor P7370 (2.0 GHz, 3 MB L2 cache, 1066 MHz FSB)* Intel Core 2 Duo Processor T6670 (2.2 GHz, 2 MB L2 cache, 800 MHz FSB)* Intel Core 2 Duo Processor T6570 (2.10 GHz, 2 MB L2 cache, 800 MHz FSB)* Intel Core 2 Duo Processor T5870 (2.00 GHz, 2 MB L2 cache, 800 MHz FSB)* Intel Celeron Processor T3100 (1.9 GHz, 1 MB L2 cache, 800 MHz FSB)* Intel Celeron Processor T3000 (1.86 GHz, 1 MB L2 cache, 800 MHz FSB)* Intel Celeron Processor T1700 (1.83 GHz, 1 MB L2 cache, 667 MHz FSB)* Intel Celeron Processor T1600 (1.66 GHz, 1 MB L2 cache, 667 MHz FSB)* Intel Celeron Processor 900 (2.20 GHz, 1 MB L2 cache, 800 MHz FSB)* Intel Celeron Processor 585 (2.16 GHz, 1 MB L2 cache, 667 MHz FSB)* **NOTE:** Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode. * Intel's numbering is not a measurement of higher performance.

Operating System	**Preinstalled**	Genuine Windows 7 Professional Edition 32* Genuine Windows 7 Home Premium Edition 32* Genuine Windows 7 Home Basic Edition 32* Genuine Windows 7 Starter 32* Genuine Windows Vista Business 32** Genuine Windows Vista Home Basic 32** Genuine Windows Vista Home Premium 32** Windows XP Professional (available through downgrade rights from Genuine Windows Vista Business)**† SUSE Linux Red Flag Linux (PRC only) FreeDOS
	Supported	Genuine Windows Vista Business 64** Genuine Windows 7 Professional 64*
	Certified	SUSE Linux Enterprise Desktop 11

* Offered when Windows 7 is generally available. System may require upgraded and/or separately purchased hardware and/or a DVD drive to install the Windows 7 software and take full advantage of Windows 7 functionality. See: http://www.microsoft.com/windows/windows-7/ for details.

** Certain Windows Vista product features require advanced or additional hardware. See: http://www.microsoft.com/windowsvista/getready/hardwarereqs.mspx and: http://www.microsoft.com/windowsvista/getready/capable.mspx for details. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit: http://www.windowsvista.com/upgradeadvisor.

Standard Features

† Windows Vista Business disk may be included for future upgrade if desired. To qualify for this downgrade an end user must be a business (including governmental or educational institutions) and is expected to order annually at least 25 customer systems with the same custom image.

Chipset

HP ProBook 4410s Notebook PC:
Mobile Intel GM45 Express Chipset with ICHM9, 1066 MHz front side bus
or
Mobile Intel GL40 Express Chipset , 667 MHz front side bus

HP ProBook 4411s Notebook PC:
Mobile Intel PM45 Express Chipset with ICHM9, 1066 MHz front side bus

Graphics

HP ProBook 4410s Notebook PC:
Mobile Intel Graphics Media Accelerator 4500MHD integrated graphics
- up to 1024 MB of total graphics memory* in units with Windows XP and 2 GB or more of system memory
- up to 1759 MB of total graphics memory* in units with Windows 7 or Windows Vista and 4 GB or more of system memory

HP ProBook 4411s Notebook PC:
ATI Mobility Radeon HD 4330 discrete graphics with 512 MB dedicated video memory
- up to 1024 MB HyperMemory* in units with Windows XP and 2 GB or more of system memory
- up to 1280 MB HyperMemory* in units with Windows 7 or Windows Vista and 2 GB or more of system memory

Microsoft DirectX 10.1 (discrete),10 (integrated) capable

*Indicates dedicated video memory and shared system memory.

Display

Internal

14.0-inch diagonal LED-backlit HD anti-glare (1366 x 768 resolution)
14.0-inch diagonal LED-backlit HD BrightView (1366 x 768 resolution)

External

Up to 32-bit per pixel color depth
VGA port supports resolutions up to 1600 x 1200 at 75 Hz, and lower resolutions at up to 100 Hz.
HDMI 1.3 port supports direct connection to high-definition displays with up to 1920 x 1080 resolution and 7-channel audio with one convenient cable (not included).
NOTE: Resolutions are dependent upon monitor capability, and resolution and color depth settings.

Standard Features

Memory	**Standard**	800 MHz DDR2 SDRAM, or 1066/1333 MHz DDR3 SDRAM*; two slots supporting dual channel memory 1024 MB, 2048 MB, 3072 MB, or 4096 MB
	Maximum	Upgradeable to 8192 MB with 4096 MB SODIMMs in slots 1 and 2
	Dual-channel	Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

* Maximum memory speed will vary based on system configuration.

NOTE: Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. Full availability of 4 GB or more of memory requires Windows Vista Business 64-bit or Linux. With Windows 32-bit operating systems, the amount of usable memory is dependent upon your configuration, so that above 3 GB all memory may not be available due to system resource requirements.

Communications

Marvell Ethernet (10/100/1000 NIC)*

Optional 56K V.92 modem**

* The term "10/100/1000" or "Gigabit" Ethernet indicates compliance with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

** Designed for downloads from 56K modem compliant sources. Maximum achievable download transmission rates currently do not reach 56 KB/s, and will vary with line conditions. Modem availability is subject to country regulatory approval.

Wireless Devices

Support for a broad range of secure, integrated wireless LAN and wireless WAN options featuring support for the latest industry standards. Wireless LAN is factory configurable or available as an option to be added later. Mobile Broadband (WWAN) requires a Windows operating system and is available in select countries as a factory configurable feature only. Integrated Bluetooth is also available (factory configurable only) and can be combined with any of the supported wireless LAN and wireless WAN options.

HP un2420 EV-DO/HSPA Mobile Broadband Module	Integrated mobile broadband module with Gobi global mobile Internet technology that provides connectivity to both CDMA (EVDO) and UMTS (HSPA) networks. It also provides GPS functionality for various mapping applications and security applications. **NOTE:** Separately purchased mobile network operator service is required. Two 850/900/1575/1800/1900/2100 MHz antennas integrated in the top of the display panel support current and future WWAN technologies.
All 802.11 integrated wireless LAN options	Wi-Fi certified* Wired Equivalent Privacy (WEP) support up to 128-bit keys Wi-Fi Protected Access (WPA) and WPA2 support 802.1x authentication support, including EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, and LEAP Advanced Encryption Standard (AES) support Dual antennas integrated in the display enclosure
Intel WiFi Link 5100	Integrated support for 802.11a, b, g, and n draft 2.0* Cisco Compatible Extensions support Up to 450 mbps data rate

Standard Features

	Intel WiFi Link 5100	Integrated support for 802.11 a, b and g Cisco Compatible Extensions support Up to 54 mbps data rate
	Broadcom 4322AGN 802.11a/b/g/draft-n Wi-Fi Adapter	Integrated support for 802.11a, b, g, and n draft 2.0* Cisco Compatible Extensions support Up to 300 mbps data rate
	Broadcom 4312G 802.11b/g WiFi Adapter	Integrated support for 802.11 b and g Cisco Compatible Extensions support Up to 54 mbps data rate
	HP Integrated Module with Bluetooth Wireless Technology	Bluetooth Specification v2.0 or v2.1 compliant Works with a wide range of Bluetooth devices

* The specifications for 802.11n draft 2.0 are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11n WLAN devices. In countries where n draft 2.0 is not allowed, this capability is not enabled (Intel 802.11a/b/g only).

Keyboard	The HP spill-resistant keyboard is designed using a Mylar film that minimizes the risk of damage to sensitive components underneath. The 101/102-key compatible keyboard features a full-pitch key layout with desktop keyboard features, such as the isolated inverted-T cursor control keys, editing keys, both left and right control and alt keys, and 12 function keys. US and International key layouts are available. Other features include hotkeys for instant access to power conservation and brightness, and 19.05 x 19.05 mm key pitch (center-to-center spacing).	
Pointing device	Touchpad with scroll zone, two pick buttons	
Expansion card slots	**ExpressCard/34 slot**	Supports ExpressCard/34 (34 mm x 75 mm x 5 mm) card sizes
	Media Card Reader	Supports SD (Secure Digital), MultiMediaCard, Memory Stick, Memory Stick Pro, Memory Stick Duo*, Picture card

* Memory Stick Duo Adapters are required and sold separately. Inserting a Memory Stick Duo Card directly into your notebook could damage the memory card and/or notebook.

Standard Features

Storage	**Internal Storage Device**	160/250/320/500 GB 7200 rpm SMART SATA II Hard Drive, 160/250/320/500 GB 5400 rpm SMART SATA II Hard Drive
	NOTE: Up to 15 GB is reserved for the system recovery software.	
	HP 3D DriveGuard (Windows models only)	The hard drive is mounted directly to the notebook frame, reducing the transmission of shock to the hard drive. Uses three-axis digital motion detection with intelligent sensitivity to help protect the hard drive during normal use from shock and vibration. The digital accelerometer temporarily halts all data transfer and parks the hard drive when abrupt motion is detected.
	Fixed optical drives	Blu-ray ROM DVD+/-RW SuperMulti DL LightScribe Drive* DVD+/-RW SuperMulti DL LightScribe Drive DVD-ROM Drive *HP ProBook 4410s support for the Blu-ray DVD drive requires Mobile Intel GM45 Express chipset and Windows7 or Windows Vista; HP ProBook 4411s supports it with any offered Windows operating system.
Interfaces	**External monitor**	One (VGA)
	HDMI	One – 1.3 compliant
	Stereo microphone in	One
	Stereo headphone/line out	One
	Power connector	One
	RJ-11/modem (optional)	One
	RJ-45/Ethernet	One
	USB 2.0	Four
	LED status indicators	Seven
Audio/Visual	High Definition Audio support Integrated stereo speakers Integrated microphone Stereo headphone/line out Stereo microphone in Optional 2 MP webcam • Supports videoconferencing and still image capture • Improved quality for video streaming and still image capture (1600x1200 resolution) • Up to 30 frames/sec • Fixed focus lens • 16-bit true color (camera sensor up to UXGA resolution)	

Standard Features

Software	**Preinstalled software with Windows Vista**	HP Recovery Manager HP Help and Support Center HP ProtectTools Security Manager HP QuickLaunch Buttons Software HP QuickLook 3 HP Connection Manager 3.0 HP Wireless Assistant HP 3D DriveGuard Microsoft Office Ready with 60-day Office Professional 2007 Trial Edition (select models) PDF Complete SE Intervideo WinDVD - DVD Player Roxio Creator Business (for optional DVD+/-RW and DVD/CDRW drives) McAfee Total Protection* Synaptics Touchpad Driver Microsoft Windows Live Messenger (select models) Webcam Software (with optional 2 MP webcam) Skype WinZip
	Additional software available from the web	HP SoftPaq Download Manager

* 60 day trial period for McAfee Total Protection for Small Business software. Internet access required to receive updates. First update included. Subscription required for updates thereafter.

HP QuickLook 3

HP QuickLook 3 allows quick read/write access to e-mail, calendar, contact and task data from Microsoft Outlook at the touch of a button from the off state, without waiting for the system to go through startup. It is designed for offline use to enhance productivity. Data is protected using pre-boot authentication and synchronized with Outlook after system startup.

NOTE: On the HP ProBook 4410s and 4411s, QuickLook 3 requires DDR3 memory. It is accessible with Windows 7, Windows Vista or Windows XP when the notebook is off. Timing may vary depending on the system configuration.

HP Recovery Manager

Models shipped with Windows Vista include HP Recovery Manager. HP Recovery Manager enables fast recovery of the factory preinstalled image if the system becomes corrupted or if important system files are accidentally deleted. Up to 15 GB of the hard drive is reserved for the system recovery software.

Standard Features

HP ProtectTools Security Manager	HP ProtectTools Security Manager is the security platform for business notebooks and desktops. The HP ProtectTools Security Manager is an extensible client security console that delivers enhanced security capabilities through add-on software modules. The following modules are available on the hard drive (also downloadable from the web) and can be configured in Software Setup: • BIOS Configuration for HP ProtectTools • Credential Manager for HP ProtectTools • Device Access Manager for HP ProtectTools • Drive Encryption for HP ProtectTools • File Sanitizer for HP ProtectTools • Privacy Manager for HP ProtectTools • Computrace* LoJack Pro for HP ProtectTools

Security	**Standard Features**	HP ProtectTools Security Manager Easy Setup Wizard One Step Login Enhanced Pre-Boot Security HP SpareKey Disk Sanitizer Configuration Control Hardware Memory Change Alert Ownership Tag Setup Password Power-On Password HP 3D DriveGuard (Windows models only) Kensington Lock Slot Support for Computrace* (must be purchased separately) HP Privacy Filter (must be purchased separately)
	* The Computrace agent is shipped turned off, and must be activated by customers when they purchase a subscription with terms ranging from one to five years. For more information on HP security solutions refer to: http://www.hp.com/go/security.	

Power Supply	HP ProBook 4410s Notebook PC: External 65-watt Smart AC adapter HP ProBook 4411s Notebook PC: External 90-watt Smart AC adapter 6-foot (1.8-meter) power cord included; total length including external AC adapter is 12 feet (3.66 meter) HP Fast Charge* * HP Fast Charge recharges your battery up to 90% within 90 minutes when the system is off.

Battery	**Primary battery**	6-cell (47 WHr) Li-Ion battery

Standard Features

Battery Life		**HP ProBook 4410s Notebook PC** (integrated graphics)	**HP ProBook 4411s Notebook PC** (discrete graphics)
	Primary battery	Up to 5 hours	Up to 3 hours and 15 minutes
	NOTE: The listed battery life measurements were taken on models running Microsoft Windows XP. Battery life will vary depending on the product configuration, product model, applications loaded on the product, power management settings of the product, and the product features used by the customer. As with all batteries, the maximum capacity of this battery will decrease with time and usage.		
System Standby Time	Up to 1 week		

Power Conservation	Supports enhanced Intel SpeedStep technology with Intel Core 2 Duo (allows Battery Optimized Mode, Maximum Performance Mode, or Automatic mode) ATI PowerPlay technology Hibernation Standby ACPI compliance

Service and Support	HP Services offers limited 3-year, 1-year and 90-day warranty options depending on country; 1-year limited warranty on primary battery. Warranty upgrades are also available. HP Care Pack Services extend service contracts beyond the standard warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at: http://www.hp.com/go/lookuptool. Additional HP Care Pack Services information by product is available at: http://www.hp.com/hps/carepack. **NOTE:** Certain restrictions and exclusions apply. Consult the HP Customer Support Center for details. http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp.

Options

Memory	HP 1 GB (DDR2 800 MHz) SODIMM	KT292AA
	HP 2 GB (DDR2 800 MHz) SODIMM	KT293AA
	HP 4 GB (DDR2 800 MHz) SODIMM	KT294AA
Storage	HP Notebooks USB Diskette Drive	DC361B
	HP Primary SATA 250 GB 5400 rpm Hard Drive	AK072AA
	HP Primary SATA 120 GB 7200 rpm Hard Drive	AH920AA
	HP 250 GB USB Pocket Media Hard Drive	FE477AA
	HP External USB CD/DVD R/RW Drive	FS943AA
	HP External MultiBay II	PA509A#xxx
Communication	HP WLAN 802/11 a/b/g/draft-n Mini-card Kit	KM591AA#xxx
Expansion	HP USB 2.0 Docking Station	FQ834AA
	HP Basic Adjustable Stand	AL549AA
Power	HP 90W Smart AC Adapter	ED495AA#xxx
	HP 65W Smart AC Adapter	ED494AA#xxx
	HP 90W Smart Combo Adapter	AJ652AA#xxx
	HP 90W Smart Auto/Truck Adapter	ED493AA
Carrying Cases	HP Basic Carrying Case	AJ078AA
	HP Basic Backpack	AM863AA
	HP Basic Messenger	AP355AA
	HP Value Nylon Case	RR314AA
	HP Universal Nylon Case	RR315AA
	HP Executive Leather Case	RR316AA
	HP Deluxe Nylon Backpack	RR317AA
	HP Deluxe Roller Case	GD405AA
Security	HP/Kensington MicroSaver Security Lock	PC766A
Input/Output Devices	HP USB Keyboard & Mouse Bundle	RC465AA#xxx
	HP USB/PS2 Optical 2-Button Scroll Mouse	DC369A
	HP USB Optical Travel Mouse	RH304AA
	HP Mobile Audio Speakers	FS944AA

Memory

800 MHz DDR2 SDRAM, or 1066/1333 MHz DDR3 SDRAM*
Two DIMM slots supporting dual channel memory
DIMM sizes supported: 1024 MB and 2048 MB

Standard Memory

- 1024 MB (1024 MB x 1)
- 2048 MB (2048 MB x 1 or 1024 MB x 2)
- 3072 MB (2048 MB x 1024 MB)
- 4096 MB (2048 MB x 2)

Optional Memory Upgrades

Support for up to 8192 MB of memory with the installation of optional DDR2 SDRAM memory kits. Both memory slots are user accessible. Please refer to the Hardware and Software Guide for installation procedures. Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

Up to	Slot 1	Slot 2
1024 MB	1024 MB	Empty
2048 MB	1024 MB	1024 MB
3072 MB	2048 MB	1024 MB
4096 MB	2048 MB	2048 MB
8192 MB	4096 MB	4096 MB

* Maximum memory speed will vary based on system configuration.
NOTE: This chart does not represent all possible memory configurations. Due to the non-industry standard nature of some third-party memory modules, we strongly recommend using only HP branded memory modules to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. Full availability of 4 GB or more of memory requires Windows Vista Business 64-bit or Linux. With Windows 32-bit operating systems, the amount of usable memory is dependent upon your configuration, so that above 3 GB all memory may not be available due to system resource requirements.

Memory Upgrades

HP 1 GB (DDR2 800 MHz) SODIMM	KT292AA
HP 2 GB (DDR2 800 MHz) SODIMM	KT293AA
HP 4 GB (DDR2 800 MHz) SODIMM	KT294AA

Removable Media Drive Support

	Quantity Supported	Drive Bay
Blu-ray ROM DVD+/-RW SuperMulti DL LightScribe Drive*	One	Fixed optical drive bay
DVD+/-RW SuperMulti DL LightScribe Drive	One	Fixed optical drive bay
DVD-ROM Drive	One	Fixed optical drive bay

*HP ProBook 4410s support for the Blu-ray DVD drive requires Mobile Intel GM45 Express chipset and Windows 7 or Windows Vista; HP ProBook 4411s supports it with any offered Windows operating system.

Internal Storage Device

	Quantity Supported	Drive Bay
Hard Drives		
500 GB 7200 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
500 GB 5400 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
320 GB 7200 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
320 GB 5400 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
250 GB 7200 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
250 GB 5400 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
160 GB 7200 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
160 GB 5400 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay

Technical Specifications

System Unit	**Dimensions** (HxWxD)	1.22 in (at front) x 13.2 in x 9.15 in 31.0 mm (at front) x 336 mm x 232.4 mm	
	Weight	Starting at 5.0 lb (2.27 kg)	
	NOTE: Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components. Weight includes 6-cell battery, hard drive, and optical drive. Weight varies by configuration and components.		
	Stand-Alone Power Requirements (AC Power)	Nominal Operating Voltage	18.5 V
		Average Operating Power	with integrated graphics: 12.8 W with discrete graphics: 21.25 W
		Max Operating Power	< 90 W or < 65W
	Temperature	Operating	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
		Non-operating	–4° to 140° F (–20° to 60° C)
	Relative Humidity	Operating	10% to 90%, non-condensing
		Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
	Shock	Operating	125 G, 2 ms, half-sine
		Non-operating	200 G, 2 ms, half-sine
	Random Vibration	Operating	0.75 grms
		Non-operating	1.50 grms
	Altitude (unpressurized)	Operating	–50 to 10,000 ft (–15.24 to 3,048 m)
		Non-operating	–50 to 40,000 ft (–15.24 to 12,192 m)
	Industry Standard Certifications	UL	Yes
		CSA	Yes
		FCC Compliance	Yes
		ENERGY STAR®	Yes*
		EPEAT	Gold**
		ICES	Yes
		Australia / NZ A-Tick Compliance	Yes
		CCC	Yes
		Japan VCCI Compliance	Yes
		MIC	Yes
		BSMI	Yes
		CE Marking Compliance	Yes
		BNCI or BELUS	Yes
		CIT	Yes
		GOST	Yes
		Saudi Arabian Compliance (ICCP)	Yes
		SABS	Yes

		UKRSERTCOMPUTER	Yes

* Configurations of the HP ProBook 4410s and HP ProBook 4411s that are ENERGY STAR qualified are identified as HP ProBook 4410s ENERGY STAR and HP ProBook 4411s ENERGY STAR on HP websites and on www.energystar.gov.

** EPEAT registration varies by country. See www.epeat.net for registration status by country. EPEAT status listed above applies to U.S.

NOTE: For accessibility information on HP products, please visit: http://www.hp.com/accessibility.

HP 90W Smart AC Adapter	**Dimensions**	5.00 x 1.97 x 1.1 in (12.7 x 5.0 x 2.9 cm)	
	Weight	0.82 lb (370 g)	
	Input	100 to 240 VAC	
		Input Efficiency	83% min at 115 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	1.5 A at 90 VAC, 0.75 A at 180 VAC PFC Version
			2.4 A at 90 VAC, 1.2 A at 180 VAC NON PFC Version
	Output	Output power 65W	90W
		DC output	19.0V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<11A, Over voltage protection- 29V max automatic shutdown
	Connector	3 pin/grounded, mates with interchangeable cords	
	Environmental Design	Operating temperature	32° to 104° F (0° to 40° C)
		Non-operating (storage) temperature	–4° to 149° F (–20° to 65° C)
		Altitude	0 to 10,000 ft (0 to 3,048 m)
		Humidity	20% to 80%
		Storage Humidity	10% to 90%
	EMI and Safety Certifications	CE Mark – full compliance with LVD and EMC directives; Worldwide safety standards – IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals – C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; MTBF– over 200,000 hours at 25°C ambient condition.	

Technical Specifications

HP 65W Smart AC Adapter	**Dimensions**	4.17 x 1.85 x 1.1 in (10.6 x 4.7 x 2.8 cm)	
	Weight	0.62 lb (280 g)	
	Input	100 to 240 VAC	
		Input Efficiency	83% min at 115 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	1.7 A at 90 VAC, 0.85 A at 180 VAC
	Output	Output power 65W	65W
		DC output	18.5V
		Hold-up time	5 msec at 115 VAC inputOutput current limit
		Output current limit	<11A, Over voltage protection- 29V max automatic shutdown
	Connector	3 pin/grounded, mates with interchangeable cords	
	Environmental Design	Operating temperature	32° to 104° F (0° to 40° C)
		Non-operating (storage) temperature	–4° to 149° F (–20° to 65° C)
		Altitude	0 to 10,000 ft (0 to 3,048 m)
		Humidity	20% to 80%
		Storage Humidity	10% to 90%
	EMI and Safety Certifications	CE Mark – full compliance with LVD and EMC directives; Worldwide safety standards – IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals – C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; MTBF – over 200,000 hours at 25°C ambient condition.	
6-Cell (47 WHr) Lithium-Ion battery (ZZ06047)	**Dimensions** (H x W x L)	0.8 x 2.3 x 8.0 in (2.0 x 5.8 x 20.3 cm)	
	Weight	0.710 lb (0.322 kg)	
	Cells/Type	6-cell Lithium-Ion	
	Energy	Watt-hour Capacity	47 WHr
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 140° F (–10° to 60° C)
		Non-operating	–4° to 140° F (–20° to 60° C)
	Battery Re-Charge Time	System in OFF mode or Standby	2.5 hours
		System ON	3 to 5 hours (depending on system power consumption)
		HP Fast Charge Technology	Charges the battery up to 90% within 90 minutes when system is OFF
Displays			

Technical Specifications

14.0-inch LED-backlit HD (1366 x 768) anti-glare	**Active Area** (W x H)	12.16 x 6.85 in (30.9 x17.4 cm)	
	Diagonal Size	14.0 in (35.6 cm)	
	Surface Treatment	Anti-glare	
	Contrast Ratio	300:1 (typical)	
	Refresh Rate	60 Hz	
	Brightness	200 nit (typical)	
	Pixel Resolution	**Pitch**	0.226 mm
		Format	1366 x 768
		Configuration	RGB Stripe
	Backlight	LED	
	PPI	112 ppi	
	Viewing Angle	±30° Horizontal, ±10° Vertical (minimum) 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical)	

14.0-inch LED-backlit HD (1366 x 768) BrightView	**Active Area** (W x H)	12.16 x 6.85 in (30.9 x17.4 cm)	
	Diagonal Size	14.0 in (35.6 cm)	
	Surface Treatment	BrightView (glossy)	
	Contrast Ratio	300:1 (typical)	
	Refresh Rate	60 Hz	
	Brightness	200 nit (typical)	
	Pixel Resolution	**Pitch**	0.226 mm
		Format	1366 x 768
		Configuration	RGB Stripe
	Backlight	LED	
	PPI	112 ppi	
	Viewing Angle	±30° Horizontal, ±10° Vertical (minimum) 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical)	

Hard Drives

Technical Specifications

500 GB 7200 rpm SATA Hard Drive	**Drive Weight**	0.25 lbs (115g)	
	Capacity	500 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	**Synchronous** (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	**Single Track**	1.5 ms
		Average	11 ms
		Maximum	22 ms
	Rotational Speed	7200 rpm	
	Logical Blocks	976,773,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

320 GB 7200 rpm SATA Hard Drive	**Drive Weight**	0.25 lbs (115g)	
	Capacity	320 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	**Synchronous** (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	**Single Track**	1.5 ms
		Average	11 ms
		Maximum	22 ms
	Rotational Speed	7200 rpm	
	Logical Blocks	625,142,448	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

Technical Specifications

250 GB 7200 rpm SATA Hard Drive	**Drive Weight**	0.25 lbs (115g)	
	Capacity	250 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	**Synchronous** (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	**Single Track**	1.5 ms
		Average	11 ms
		Maximum	22 ms
	Rotational Speed	7200 rpm	
	Logical Blocks	488,397,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

160 GB 7200 rpm SATA Hard Drive	**Drive Weight**	0.25 lb (115 g)	
	Capacity	160 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	**Synchronous** (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	**Single Track**	1.5 ms
		Average	11 ms
		Maximum	22 ms
	Rotational Speed	7200 rpm	
	Logical Blocks	312,581,808	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

Technical Specifications

500 GB 5400 rpm SATA Hard Drive	**Drive Weight**	0.22 lb (101 g)	
	Capacity	500 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	**Synchronous** (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	**Single Track**	3 ms
		Average	13 ms
		Maximum	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	976,773,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

320 GB 5400 rpm SATA Hard Drive	**Drive Weight**	0.22 lb (101 g)	
	Capacity	320 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	**Synchronous** (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	**Single Track**	3 ms
		Average	13 ms
		Maximum	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	625,142,448	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

Technical Specifications

250 GB 5400 rpm SATA Hard Drive	**Drive Weight**	0.22 lb (101 g)	
	Capacity	250 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	**Synchronous** (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	**Single Track**	3 ms
		Average	13 ms
		Maximum	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	488,397,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	
160 GB 5400 rpm SATA Hard Drive	**Drive Weight**	0.22 lb (101 g)	
	Capacity	160 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	**Synchronous** (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	**Single Track**	3 ms
		Average	13 ms
		Maximum	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	312,581,808	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

Removable Storage Drives

Technical Specifications

DVD-ROM Drive	**Access Times**	Random	< 110 ms CD (typical)
			< 110 ms DVD (typical)
	Max Data Transfer Rate	24X CD-ROM	Up to 3,600 KB/s
		8X-DVD	Up to 10,800 KB/s
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	
	Supported Media (write)	None	
	Max Media Capacity (read)	8.5 GB	
	Transport	Tray Loading	

DVD+/-RW SuperMulti DL LightScribe Drive	**Access Times**	Random	< 150ms CD (typical)
			< 160 ms DVD (typical)
	Max Data Transfer Rate	24X CD-ROM	Up to 3,600 KB/s
		8X DVD	Up to 10,800 KB/s
		24X CD-R	Up to 3,600 KB/s
		16X CD-RW	Up to 2,400 KB/s
		8X DVD+R	Up to 10,800 KB/s
		8X DVD+RW	Up to 10,800 KB/s
		8X DVD-R	Up to 10,800 KB/s
		6X DVD-RW	Up to 8100KB/s
		4X - DVD+R Dual Layer	Up to 5,400 KB/s
		4X - DVD-R Dual Layer	Up to 5,400 KB/s
		5X DVD-RAM	Up to 6,750 KB/s
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	
	Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, LightScribe	
	Max Media Capacity (read)	8.5 GB	
	Max Media Capacity (write)	8.5 GB	
	Transport	Tray Loading	

Technical Specifications

Blu-ray ROM DVD+/-RW SuperMulti DL LightScribe Drive	**Access Times**	Random	<190 ms CD-ROM (typical) < 190ms DVD-ROM (typical) <230 ms BD-ROM (typical)
	Max Data Transfer Rate	24X CD-ROM	Up to 3600KB/s
		8X DVD-ROM	Up to 10800 KB/s
		16X CD-R	Up to 1,200KB/s
		10X CD-RW	Up to 1500 KB/s
		8X DVD+R	Up to 10800 KB/s
		8X DVD+RW	Up to 10,800KB/s
		8X DVD-R	Up to 10800 KB/s
		6X DVD-RW	Up to 8,100 KB/s
		4X - DVD+R Dual Layer	
		4X - DVD-R Dual Layer	Up to 5400 KB/s
		5X DVD-RAM	Up to 6750 KB/s
		4X BD-ROM	Up to 18,000KB/s
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW. DVD-RAM, BD-ROM, BD-R, BD-RE	
	Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+R(9), DVD+RW, DVD-R, DVD-R(9), DVD-RW, DVD-RAM, LightScribe	
	Max Media Capacity (read)	50.0 GB	
	Max Media Capacity (write)	8.5 GB	
	Transport	Tray Loading	

Audio

Hardware	**Implementation**	ADI 1984AJCPZ High Definition CODEC
	Touch-Sensitive Volume Controls	Volume up, volume down, and mute
	Full Duplex	Yes
	Microphone In	Stereo
	Headphone/Line Out	Stereo
	Integrated Microphone	Yes

Technical Specifications

Audio Output Quality	**Frequency Response**	20 Hz – 20 kHz
	Signal to Noise Ratio	>85 dB
	Total Harmonic Distortion	0.01%
	Noise Floor	-110 dB
	Play/Record Sampling Rate(s)	8 kHz – 48kHz
	DAC	16, 20 or 24-bit
	ADC	16 or 20-bit
Integrated Stereo Speakers	**Power Rating**	1.5 Watts
	Impedance	4 Ohms
Communications		
Integrated Marvell 10/100/1000 NIC	**Ethernet Features**	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3z and 802.3ab; IEEE 802.3 clauses 34-42) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s IEEE 802.1p QoS (Quality of Service) Support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable)
	Power Management	ACPI compliant – multiple power modes Situation-sensitive features reduce power consumption
	Performance Features	TCP/IP/UDP Checksum Offload (configurable)
	Manageability	Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite
	Interface	PCI Express x1
	NIC Device Driver Name	Marvell Yukon 88E8072 PCI-E Gigabit Ethernet Controller

Technical Specifications

V.92 56K Data/Fax Modem	**Form Factor**	MDC 1.5 Daughtercard
	Power Management Support	APM Revision 1.2, ACPI
	Approvals/ Certifications	UL, CSA, NEMKO, CCIB, Industry Canada, FCC Part 68, CTR21, FCC Part 15 Class B, Canadian ICES-003 Class B, C.I.S.P.R.22, Australian ACA, CE Mark, Other Countries
	Data Mode Capabilities	V.92 data V.8bis V.80 V44, V.42bis, MNP5 (Compression) V.42 (LAPM, MNP2-4) (Error Correction) **Optional symbol rates:** 2800, 3429 Asymmetric Symbol rates **Synchronous primary channel data signaling rates:** 3600, 31200 Automatic rate re-negotiation V.34 V.32bis V.32 V.23 V.22bis V.22 V.21 Bell 212A Bell 103J
	Fax Mode Capabilities	TIA/EIA-578-B (Class 1) T.30, T.4 (Group 3) V.17 V.29 V.27ter V.21 Channel 2
	Command Set	V.250 (Partial) TIA-602 Identification: +GMI, +GMM, +GMR Port control: +IPR, +ICF, +IFC, +ILRR Modulation: +MS, +MR, +MA Error control: +ES, +ER, +EB, +ESR, +ETBM Data compression: +DS, +DR V.251

Technical Specifications

HP un2420 EV-DO/HSPA Mobile Broadband Module	**Technology/Operating Bands**	GSM/GPRS/EDGE: 850MHz(Cell), 900MHz(EGSM), 1800MHz(DCS), 1900MHz (PCS) UMTS/WCDMA with receive diversity: 2100MHz (UTRA FDD Band I), 1900MHz (UTRA FDD Band II), 900Mhz (UTRA FDD Band VIII), 850MHz (UTRA FDD Band V) 1xEVDO/1xRTT with receive diversity: 850MHz (Band Class0-Cell), 1900MHz (Band Class1-PCS)
	Wireless Protocol Standards	GSM/GPRS/EDGE: Class B, Multi-slot operation, coding schemes CS1 - CS4 and MSC1 - MSC9. UMTS/WCDMA: Release 99 and Release 6 CDMA: 1xEVDO Release 0 and Release A, IS-95A, IS-95B, IS-2000
	Wireless Parametric Standards	Meets or exceeds TIA/EIA IS-98-D
	Maximum Data Rates	UMTS (HSPA) - 7.2 Mbps (Download), 2.0Mbps (Upload) CDMA (EVDO Release A) - 3.1 Mbps (Download), 1.8Mbps (Upload)
	GPS	Standalone GPS enabled
	GPS Bands	L1 - 1575.42 MHz
	Maximum Output Power	GSM/GPRS/EDGE: 32dBm (+/-1) WCDMA: 24dBm (+/-1) CDMA: 24dBm (+/-1)
	Maximum Power Consumption	2500mA (peak); 1000mA (average)
	Power Consumption, Sleep Mode	5 mA
	Power Management	USB selective suspend Integrated notebook wireless button
	Antenna Type	Dual high efficiency 5 band antennae with spatial diversity, mounted in the display enclosure
	Form Factor	PCI-Express MiniCard, USB 2.0 interface
	Weight	11.5 g
	Dimensions (Length x Width x Thickness)	2.01 x 1.18 x 0.18 in (51 x 30 x 5 mm)
	Voltage, Operating	3.3v +/- 10%
	Temperature, Operating (from TIA/EIA/IS-98-D)	-22° to 140° F (-30° to 60° C) (full RF performance) -22° to 167° F (-30° to 75° C) (reduced RF performance)
	Temperature, Non-operating, 96 hours (from MIL-STD 202 Method 108)	-40° to 185° F (-40° to 85° C)
	Humidity, Non-operating	85% relative humidity for 48 hours @ 185° F (85° C) (non-condensing)
	Configuration Utilities	HP Connection Manager
	LED Activity	LED Off - Radio Off; Solid LED On - Radio On
Intel WiFi Link 5100	**Wireless LAN Standards**	IEEE 802.11a IEEE 802.11b

	IEEE 802.11g IEEE 802.11n (draft 2.0)* * The specifications for 802.11n draft 2.0 are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11n WLAN devices. In countries where n draft 2.0 is not allowed, this capability is not enabled.
Interoperability	Wi-Fi certified (802.11abg only) Cisco Compatible Extensions Program compliant (802.11abg only) with Microsoft Windows Vista and XP (details at: http://www.hp.com/go/notebooks/WLAN)
Frequency Band	2.4 GHz and 5 GHz
Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n (draft): 66 possible data rates, ranging from 6 Mbps to 300 Mbps, depending on the combination of Bandwidth, Modulation Coding Scheme, and Guard Interval used, as defined in IEEE 802.11n (draft) specification
Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
Security[1]	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES (support for key sizes of 128, 192, and 256 bits), 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST. Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power (for CCK)[2]	15 dBm
Output Power (for OFDM; power varies by data rate)[2]	15 dBm
Power Consumption	Transmit: 2.3 Watts (average, with one spatial streams) Receive: 1.9 Watts (average with two receive chains) Idle mode[3]: 30 mW (average) Radio off: 20 mW (max)
Power Management	ACPI compliant power management 802.11 compliant power saving mode
Receiver Sensitivity[4]	300 Mbps: -68 dBm, 54 Mbps: -74 dBm, 6 Mbps: -90 dBm
Antenna Connections	3 U.FL type connectors, 50 ohm nominal impedance
Form Factor	PCI-Express Half-MiniCard
Weight	0.013 lb (6 g)
Dimensions	0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)

Technical Specifications

Operating Voltage	3.3V +/- 9%, 1.5V +/- 5%	
Temperature	Operating Non-operating	32° to 176° F (0° to 80° C) –40° to 176° F (–40° to 80° C)
Humidity	Operating Non-operating	10% to 90% (non-condensing) 5% to 90% (non-condensing)
Altitude	Operating Non-operating	0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)
Configuration Utility[5]	Microsoft Windows XP Choice of Configuration Utility: • Microsoft Windows XP Wireless Network Connection Manager • Intel PROSet for Microsoft Windows XP (required for Cisco Compatible Extensions support) Microsoft Windows Vista • Microsoft Windows Vista Wireless Network Connection Manager. • Intel IHV extensions for Windows Vista available to support Cisco Compatible Extensions.	
LED Activity	LED Off – Radio OFF; Solid LED On – Radio ON	

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. In Power Save Polling mode and on battery power.
4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
5. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

Broadcom 4312G 802.11b/g WiFi Adapter

Wireless LAN Standards	IEEE 802.11b IEEE 802.11g
Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliantwith Microsoft Windows Vista and XP (details at: http://www.hp.com/go/notebooks/WLAN)
Frequency Band	2.4 GHz
Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM
Security[1]	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST. Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.

Technical Specifications

Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.	
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK	
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)	
Roaming	IEEE 802.11 compliant roaming between access points	
Output Power (for CCK)[2]	17 dBm , nominal	
Output Power (for OFDM; power varies by data rate)[2]	15 dBm , nominal	
Power Consumption	Idle associated: 250 mW Idle unassociated: 150 mW Transmit: 2.0 W (max) Receive: 2.0 W (max)	
Power Management	ACPI compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity[3]	54 Mbps: -71 dBm, 11 Mbps: -85 dBm , 1 Mbps: -95 dBm	
Antenna type	High efficiency dual band antenna with spatial diversity, mounted in the display enclosure	
Form Factor	PCI-Express Half-MiniCard	
Weight	0.013 lb (6 g)	
Dimensions	0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)	
Operating Voltage	3.3v +/- 10%	
Temperature	Operating Non-operating	14° to 149° F (–10° to 65° C) –40° to 176° F (–40° to 80° C)
Humidity	Operating Non-operating	10% to 90% (non-condensing) 5% to 95% (non-condensing)
Altitude	Operating Non-operating	0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)
Configuration Utility[4]	Microsoft Windows XP Choice of Configuration Utility: • Microsoft Windows XP Wireless Network Connection Manager • Broadcom Wireless Configuration Utility (required for Cisco Compatible Extensions support) Microsoft Windows Vista • Microsoft Windows Vista Wireless Network Connection Manager • Broadcom IHV extensions for Windows Vista available to support Cisco Compatible Extensions.	
LED Activity	LED Off – Radio OFF; Solid LED On – Radio ON	

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
4. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft

Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

Broadcom 4322AGN 802.11a/b/g/draft-n WiFi Adapter	**Wireless LAN Standards**	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n (draft 2.0)* * The specifications for 802.11n draft 2.0 are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11n WLAN devices.
	Interoperability	Wi-Fi certified (802.11abg only) Cisco Compatible Extensions Program compliant (802.11abg only) with Microsoft Windows Vista and XP (details at: http://www.hp.com/go/notebooks/WLAN)
	Frequency Band	2.4 GHz and 5 GHz
	Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n (draft): 6, 6.5, 9, 12, 13, 13.5, 18, 19.5, 24, 26, 27, 36, 39, 40.5, 48, 52, 54, 58.5, 65, 78, 81, 104, 108, 117, 121.5, 130, 135, 162, 216, 243, 270, 300 Mbps
	Frequency Support	20 MHz: 2.4 GHz and 5 GHz bands 40 MHz: 2.4 GHz and 5 GHz bands
	Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
	Security[1]	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST. Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.
	Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
	Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK
	Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
	Roaming	IEEE 802.11 compliant roaming between access points
	Output Power (for CCK)[2]	17 dBm
	Output Power (for OFDM; power varies by data rate)[2]	15 dBm
	Power Consumption	Idle associated: 250 mW Idle unassociated: 150 mW Transmit/Receive 20 MHz channel: 2.0 W (max) Transmit/Receive 40 MHz channel: 2.0 W (max)

Technical Specifications

Power Management	ACPI compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity[3]	270 Mbps: -61dBm, , 54 Mbps: -72 dBm, 11 Mbps: -85 dBm , 1 Mbps: -92 dBm	
Antenna type	High efficiency dual band antenna with spatial diversity, mounted in the display enclosure	
Form Factor	PCI-Express Half-MiniCard	
Weight	0.013 lb (6 g)	
Dimensions	0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)	
Operating Voltage	3.3v +/- 10%	
Temperature	Operating Non-operating	14° to 149° F (–10° to 65° C) –40° to 176° F (–40° to 80° C)
Humidity	Operating Non-operating	10% to 90% (non-condensing) 5% to 95% (non-condensing)
Altitude	Operating Non-operating	0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)
Configuration Utility[4]	Microsoft Windows XP Choice of Configuration Utility: • Microsoft Windows XP Wireless Network Connection Manager • Broadcom Wireless Configuration Utility (required for Cisco Compatible Extensions support) Microsoft Windows Vista • Microsoft Windows Vista Wireless Network Connection Manager • Broadcom IHV extensions for Windows Vista available to support Cisco Compatible Extensions.	
LED Activity	LED Off – Radio OFF; Solid LED On – Radio ON	

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
4. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

HP Integrated Module with Bluetooth 2.1 Wireless Technology	**Bluetooth Specification**	2.1 Compliant
	Dimensions	1.18 x 0.26 x 0.13 in (30 x 6.5 x 3.25 mm)
	Frequency Band	2402 to 2480 MHz
	Number of Available Channels	79 (1 MHz) available channels

Technical Specifications

Data Rates and Throughput	3 Mbps data rate; throughput up to 2.17 Mbps	
	Synchronous Connection Oriented links up to 3, 64 kbps, voice channels	
	Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric	
Transmit Power	-6 dBm to 4 dBm (Bluetooth Class II)	
Receiver Sensitivity	Better than -80 dBM at 0.1 % raw bit error rate	
Power Consumption	Peak (Tx) 264 mW	
	Peak (Rx) 231 mW	
	Sleep <1 mW	
Antenna	Internally integrated within module	
Range	Up 33 ft (10 m)	
Electrical Interface	USB 2.0 compliant	
	Microsoft Windows Plug and Play compliant	
Bluetooth Software Supported	Broadcom Bluetooth for	
	Microsoft Windows Bluetooth Software	
Link Topology	Point to Point, Multipoint Pico Nets up to 7 slaves	
Security	Full support of Bluetooth Security Provisions	
Power Management	Microsoft Windows ACPI, and USB Bus Support	
	Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff	
Certifications	All necessary regulatory approvals for supported countries, including:	
	FCC (47 CFR) Part 15C, Section 15.247 & 15.249	
	ETS 300 328, ETS 300 826	
	Low Voltage Directive IEC950	
	UL, CSA, and CE Mark	
Temperature	Operating	-4° to 158° F (-20° to 70° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90%
	Non-operating	5% to 95%
Altitude	Operating	15,000 ft (4,572 m)
	Non-operating	40,000 ft (12,192 m)
Bluetooth Profiles Supported	Serial Port Profile (SPP)[1]	
	Service Discovery Applicaton Profile (SDAP)	
	Dial-Up Networking (DUN)[1,2]	
	Generic Object Exchange Profile (GOEP)[1,2]	
	Object Push Profile (OPP)[1,2]	
	File Transfer Profile (FTP)	
	Synchronization Profile (SYNC)	
	Hard Copy Cable Replacement (HCRP)[1,2]	
	Personal Area Networking Profile (PAN)[1,2]	
	Human Interface Device Profile (HID)[1,2]	

		FAX Profile (FAX)
		Basic Imaging Profile (BIP)[2]
		Headset Profile (HSP)
		Hands Free Profile (HFP)
		Advanced Audio Distribution Profile (A2DP)

[1] indicates the profile is supported by Microsoft Windows XP SP2
[2] indicates the profile is part of Windows Vista

HP Integrated Module with Bluetooth 2.0 Wireless Technology	**Bluetooth Specification**	2.0 Compliant
	Dimensions	1.02 x 0.55 x 0.22 in (26 x 14 x 5.7 mm)
	Frequency Band	2402 to 2480 MHz
	Number of Available Channels	79 (1 MHz) available channels
	Data Rates and Throughput	3 Mbps data rate; throughput up to 2.17 Mbps
		Synchronous Connection Oriented links up to 3, 64 kbps, voice channels
		Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric
	Transmit Power	-6 dBm to 4 dBm (Bluetooth Class II)
	Receiver Sensitivity	Better than -80 dBM at 0.1 % raw bit error rate
	Power Consumption	Peak (Tx) 264 mW
		Peak (Rx) 231 mW
		Sleep <1 mW
	Antenna	Internally integrated within module
	Range	Up 33 ft (10 m)
	Electrical Interface	USB 2.0 compliant
		Microsoft Windows Plug and Play compliant
	OS Support	Microsoft Windows XP Professional and Home
		Microsoft Windows 2000
	Bluetooth Software Supported	Broadcom Bluetooth for Windows
		Microsoft Windows XP Bluetooth Software
	Link Topology	Point to Point, Multipoint Pico Nets up to 7 slaves
	Security	Full support of Bluetooth Security Provisions
	Power Management	Microsoft Windows ACPI, and USB Bus Support
		Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff
	Certifications	All necessary regulatory approvals for supported countries, including:
		FCC (47 CFR) Part 15C, Section 15.247 & 15.249
		ETS 300 328, ETS 300 826
		Low Voltage Directive IEC950
		UL, CSA, and CE Mark

Temperature	Operating	–4° to 158° F (–20° to 70° C)
	Non-operating	–40° to 176° F (–40° to 80° C)
Humidity	Operating	10% to 90%
	Non-operating	5% to 95%
Altitude	Operating	15,000 ft (4,572 m)
	Non-operating	40,000 ft (12,192 m)
Bluetooth Profiles Supported	(with Bluetooth for Windows 4.0 software)	
	Serial Port Profile (SPP)*	
	Dial-Up Networking (DUN)*	
	Generic Object Exchange Profile (GOEP)	
	Object Push Profile (OPP)*	
	File Transfer Profile (FTP)	
	Synchronization Profile (SYNC)	
	Hard Copy Cable Replacement (HCRP)*	
	Personal Area Networking Profile (PAN)*	
	Human Interface Device Profile (HID)*	
	FAX Profile (FAX)	
	Basic Imaging Profile (BIP)	
	Headset Profile (HSP)	
	Hands Free Profile (HFP)	
	Advanced Audio Distribution Profile (A2DP)	

* indicates the profile is also supported by Microsoft Windows XP SP2

Eco Data

Eco-Label Certifications

This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- US Energy Star
- IT ECO declaration
- EPEAT - Gold

System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for this model is based on a "Typically Configured Notebook"

HP ProBook 4410s Notebook PC

Energy Consumption	115 VAC	230 VAC	100 VAC
Normal Operation	9.039 W	9.109 W	8.969 W
Sleep (Energy Star low power mode)	0.667 W	0.756 W	0.625 W
Off	0.825 W	0.967 W	0.821 W

Heat Dissipation*	115 VAC	230 VAC	100 VAC
Normal Operation	31 BTU/hr	31 BTU/hr	31 BTU/hr
Sleep	2 BTU/hr	3 BTU/hr	2 BTU/hr
Off	3 BTU/hr	3 BTU/hr	3 BTU/hr

* Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

HP ProBook 4411s Notebook PC

Energy Consumption	115 VAC	230 VAC	100 VAC
Normal Operation	14.36 W	14.79 W	14.38 W
Sleep (Energy Star low power mode)	0.7 W	0.72 W	0.68 W
Off	1 W	1.1 W	1 W

Heat Dissipation*	115 VAC	230 VAC	100 VAC
Normal Operation	49 BTU/hr	51 BTU/hr	49 BTU/hr
Sleep	2 BTU/hr	2 BTU/hr	2 BTU/hr
Off	3 BTU/hr	4 BTU/hr	3 BTU/hr

* Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

HP ProBook 4410s Notebook PC and HP ProBook 4411s Notebook PC

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)		
System Fan Off	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	3.5	28
Fixed Disk (random writes)	3.5	28

NOTE: System fan is usually off except when charging the battery

Batteries

This battery(s) in this product comply with EU Directive 2006/66/EC

Batteries used in the product do not contain:

- Mercury greater the 5ppm by weight
- Cadmium greater than 10ppm by weight

The battery type and chemistry used in the product is:

- Li-ion
- High capacity Lithium-Ion battery

Additional information:

This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive – 2002/95/EC.

This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.

This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).

This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, seewww.epeat.net

Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.

This product contains 0% post consumer recycled plastic (by wt.)

This product is greater than 97.3% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
  - Corrugated 485 g
  - CANON bags - several layers 15 g
  - Cardboard & misc. 70 g
- Internal:
  - EPE-Expanded Polyethylene 70 g
- The Corrugated carton packaging material is made from 100% recycled content.
- The CANON bags - several layers packaging materials contains at least 100% recycled content.
- The Cardboard & misc. packaging materials contains at least 100% recycled content.
- The EPE-Expanded Polyethylene packaging materials contains at least 100% recycled content.

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

Material Usage

This product does not contain any of the following substances in excess of regulatory limits (for reference of these limits please refer to the HP General Specification of the Environment (http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html):

- Asbestos

- Certain Azo Colorants
- Certain Brominated Flame Retardants - may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel - finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) - except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/go/reuse-recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/recyclers. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

Hewlett-Packard Corporate Environmental Information

For more information about HP's commitment to the environment:

Global Citizenship Report
http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html
Environment website
http://www.hp.com/environment
Eco-label certifications
http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html
ISO 14001 certificates:
http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html

Technical Specifications

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